131096

ecology and environment, inc.

ROSSLYN CENTER, 1700 NORTH MOORE ST., ARLINGTON, VA 22209, TEL. 703-522-6065, TELEX 650-267-6032

International Specialists in the Environment

Seattle: 206-624-9537
Idaho: 208-752-1252

April 15, 1990

Philip C. Younis
Environmental Protection Agency
814 Chestnut
Philadelphia, PA 19107 3HW-31

Ref: TDD TPM-8910-002

Dear Phil:

Enclosed please find the trip report for the residential well sampling in Parkerford, Pennsylvania during the week of January 7-12, 1990. As indicated in the Action Memorandum dated January 30, 1990, nine of the 44 homes/businesses sampled showed detectable concentrations of Target Compound List volatile organic compounds (VOCs). Trichloroethylene (TCE) was detected in private wells in concentrations up to 160.0 ug/l. In addition to TCE, other VOCs detected include: cis-1,2-dichloroethene, 1,1,1-trichloroethane, 1,1-dichloroethane, toluene, and xylenes.

For the purposes of the proposed emergency removal action, it was proposed by the Agency for Toxic Substances and Disease Registry that a 50 ug/l concentration of total VOCs be used as an action level. This figure represents approximately 1/5 of the Drinking Water Equivalent Level for TCE. Three of the 44 homes/businesses sampled had total VOC concentrations above this proposed action level.

The Action Memorandum submitted to the Environmental Protection Agency (EPA) Region III, proposed the installation and maintenance of four activated carbon filtration devices (1 for contingency) in homes with total VOC concentrations above the 50 ug/l action level. The Technical Assistance Team (TAT) had estimated a project ceiling of $78,500 for this removal action.

Sincerely,

Deborah Kopsick

Deborah Kopsick
TAT AZPM

RR/thl

Enclosures

cc: C. Kitz, EPA Region X
R. Fullner, E & E, Seattle

AR100105

ecology and environment, inc.
101 YESLER WAY, SEATTLE, WASHINGTON, 98104, TEL. 206/624-9537
International Specialists in the Environment

TRIP REPORT

DATE: April 6, 1990

THRU: Richard Fullner, TATL, E & E, Seattle, WA

TO: Debbie Kopsick, AZPM, E & E, Arlington, VA

FROM: Robert Rau, TAT, E & E, Seattle, WA

SUBJ: **Residential Well Sampling in Parkerford, PA**

REF: TPM-8910-002

Place Visited:

Parkerford, Pennsylvania is located in Chester County approximately 40 miles northwest of Philadelphia, Pennsylvania. Samples were collected during this investigation in the vicinity of the Recticon/Allied Steel Corporation site located at the corner of Route 724 and Wells Road in Parkerford.

Purpose of Trip:

To collect groundwater samples from private wells located near the Recticon/Allied Steel site to determine current levels of volatile organic contamination.

Person Conducting Assessment:

Robert Rau, TAT-Project Manager
Ecology & Environment Inc., Seattle, WA (206) 624-9537

Persons Contacted:

Philip C. Younis, On-Scene Coordinator
Environmental Protection Agency, Philadelphia, PA (215) 597-9328

Michael T. Harmer, Staff Engineer
Dames & Moore, Newark, DE (302) 292-2550

The owners/renters of 44 homes and/or businesses where well sampling occurred (Attachment A).

Date of Trip:

January 7-12, 1990

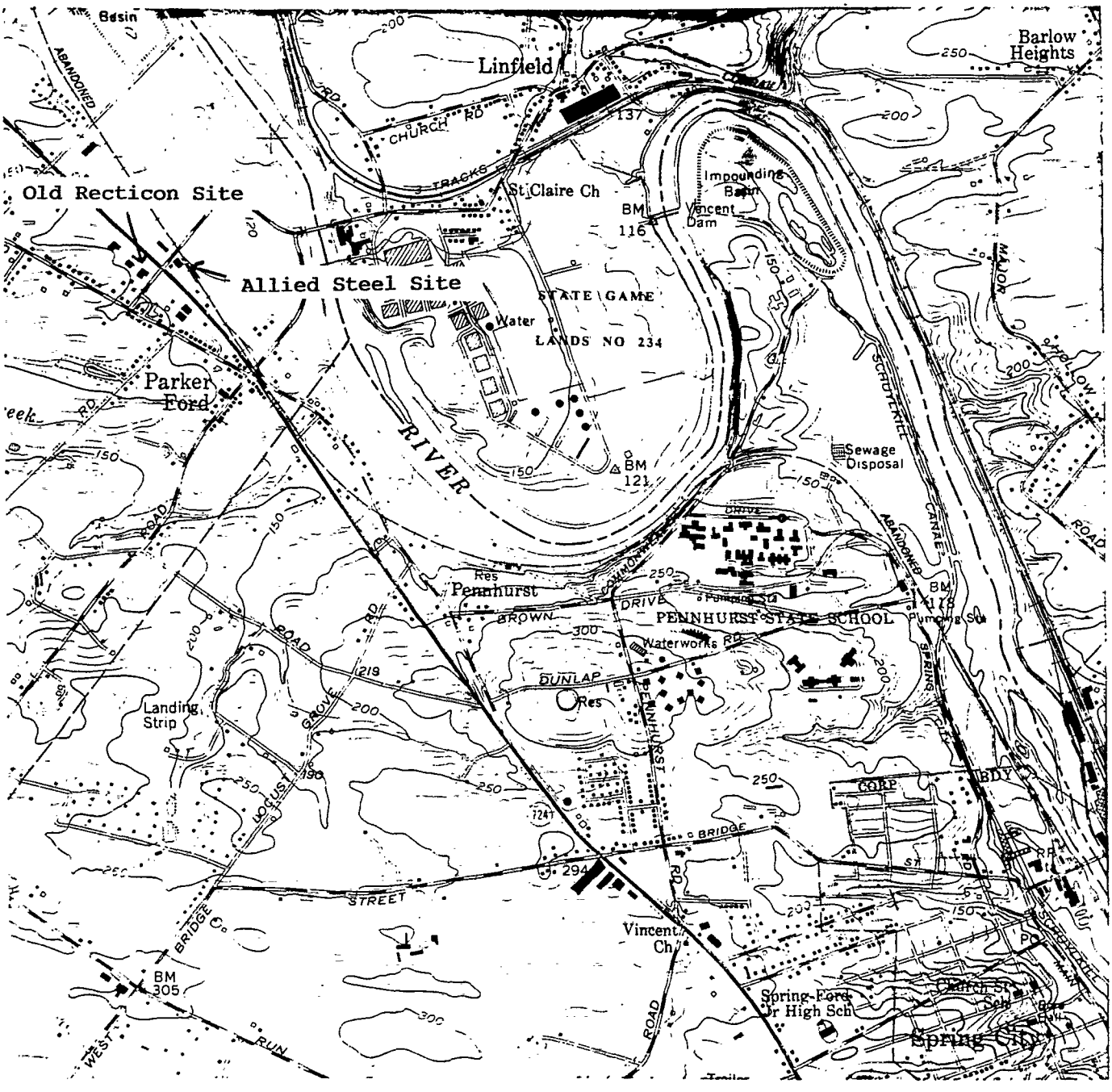
BACKGROUND

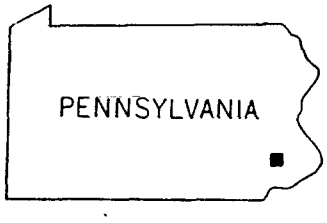
The Recticon/Allied Steel Corporation site consists of two separate inactive facilities located at the corner of Route 724 and Wells Road in Parkerford, Pennsylvania (Figure 1). Together, the two properties occupy about 5 acres of land.

Recticon, a subsidiary of Rockwell International, manufactured silicon wafers for electrical components from 1974 to 1981. Recticon was first identified as a potentially responsible party as a consequence of a 1979 groundwater investigation conducted by Pennsylvania Department of Environmental Resources (PDER). In that study, trichloroethylene (TCE) was detected in off-site wells in concentrations up to 761 ppb (Jolly 1980). The PDER then requested that Recticon hire the services of an environmental consulting firm to further investigate their role in contributing to aquifer contamination with organic solvents. Roy F. Weston Inc. (Weston) was retained by Recticon in 1980 to assess the site, and determine their role in TCE contamination of groundwater.

While in operation, Recticon discharged industrial process wastes into storm drains. TCE was detected in plant drain lines and on-site soils (Bopp 1980, Weston 1982, Orloff 1989). In May 1981, contaminated soils were removed and transported to a hazardous waste facility. In an effort to clean up contaminated groundwater beneath the site, Recticon pumped 35,000 gallons of water per day, for 245 days, through an activated carbon filter to remove volatile organic compounds (VOCs). This treatment recovered 13.4 gallons of TCE (Weston 1982), but VOC concentrations in the groundwater actually increased through time. The groundwater cleanup effort was terminated when the Recticon facility was closed in 1982. Weston concluded that the trend towards increasing TCE concentrations in purge water as the groundwater treatment program progressed, indicated Recticon was drawing TCE towards the pumping well in a plume from at least one other source. Additional sample testing in December, 1985 found TCE concentrations up to 150 ppb in off-site wells (Orloff 1989).

The Allied Steel Corporation is an inactive facility that produced structural steel and pressure vessels. A 1984 PDER study detected high concentrations of TCE in the soil near the compressor room at the north end of the building. This contamination apparently resulted from spills or leaks of used cleaning solvents that were stored in this area. The contaminated soil was reportedly excavated and disposed of off-site. Allied Steel retained the services of R.E. Wright Associates Inc. (Wright) to complete a hydrogeological study of the site area, and make





MAP LOCATION

ecology & environment, inc.	
Job: TPM-8910-002	Waste Site:
Drawn by: R. Rau	Date: 4/1/90

FIGURE 1: SITE LOCATION MAP.
PARKERFORD, PENNSYLVANIA.
PHOENIXVILLE, PA 1:24,000
U.S.G.S. TOPOGRAPHIC MAP.

AR100108

recommendations where appropriate. Several of Wright's conclusions regarding the nature of local groundwater flow are contrary to those of Weston's. In 1986 an aeration tower was erected on-site by the owner of Allied Steel, however it was never in operation.

The former Recticon facility is now occupied by a cabinet making operation, Coventry Country Kitchens. Allied Steel is no longer in operation, and the owner has filed for bankruptcy.

The area surrounding the site consists of business, residential, and agricultural properties. Surface water runoff from the area flows through man-made ditches, culverts, and natural waterways into the Schuylkill River. The reported discharge point to the river is about 2,500 feet southeast of the site at the mouth of Piegon Creek. The area in the immediate vicinity of the site is not serviced by a public water system, and homeowners must rely instead on private wells. There are an estimated 427 homes within a one mile radius of the site.

On January 30, 1990, a funding request for an emergency removal action (action memorandum) was submitted by the Region III Environmental Protection Agency (EPA). This action memo was in response to the analytical results obtained during this sampling effort. The proposed actions included the installation and maintenance of four activated carbon filtration devices in homes with total VOC concentrations above the 50 ug/l action level. This action level was proposed by the Agency for Toxic Substances and Disease Registry (ATSDR). A total project ceiling estimate for this removal action was $78,500.

The Recticon/Allied Steel site was proposed to the National Priorities List (NPL) in June 1988, and is undergoing active remedial investigation.

TAT ACTIONS

Prior to the beginning of field activities, the TAT sent letters to property owners in Parkerford where it was anticipated sampling would occur. The purpose of these letters was to inform home owners of the EPA study, and the proposed dates of sampling activities (Attachment B). Properties to be sampled were chosen such that they were either down gradient of the groundwater flow from the Recticon/Allied Steel site, or immediately up-gradient.

Fifty-two groundwater samples (including quality assurance/quality control samples) were collected from 44 homes and/or businesses and analyzed for VOCs according to EPA method 8010/8020 at a 0.5 ug/l detection limit. The location of each property sampled is indicated on the Tax lot identification map provided in Attachment C. Groundwater samples were taken at the tap, from a source closest to the well location. Water taps were purged for a period of five to 10 minutes prior to sampling. All samples and sampling procedures were duplicated

by a representative from Dames & Moore Inc., who was retained by Rockwell International for the purposes of oversight and sample collection. It should be noted that samples collected by Dames & Moore represent samples collocated with TAT samples, and are not sample duplicates due to the non-homogeneous nature of groundwater. Much of the sampling activities were also observed by Philip C. Younis, On-Scene Coordinator, EPA, Region III.

CONCLUSION

Nine of the 44 homes/businesses sampled showed detectable concentrations of Target Compound List VOCs. TCE was detected in private water wells in concentrations up to 160.0 ug/l. In addition to TCE, other VOCs detected include: cis-1,2-dichloroethene, 1,1,1-trichloroethane, 1,1-dichloroethane, toluene, and xylenes. Analytical results from each of the 52 samples collected is provided in Attachment D. The TAT data quality review is given in Attachment E.

For the purposes of the proposed emergency removal action, it was proposed by the ATSDR that a 50 ug/l concentration of total VOCs be used as an action level (Younis 1990). This figure represents approximately 1/5 of the Drinking Water Equivalent Level (DWEL) value of TCE. Three of the 44 homes/businesses sampled had total VOC concentrations above this proposed action level. The data on these three properties is summarized as follows:

Sample #	Lot#	Property Owner	Total VOC (ug/l)
T0010026	25	Frederick Hanbery 307 Church Rd. Norristown, PA 19401 Renter: Phylis Otts	64.3
T0010052	25	Frederick Hanbery 307 Church Rd. Norristown, PA 19401 Renter: Robin Schlichter	69.0
T0010042	84.2	C/O Gambone Bros 1030 W. Germantown Pk Fairview Village, PA 19409 Renter: Bell Telephone	241.3

REFERENCES

Bopp, Frederick. November 1980. Groundwater Contamination Study, Recticon, Inc. Roy F. Weston Inc. Report, West Chester, Pennsylvania.

Jolly, William. May 1980. Letter to Recticon Inc. from Pennsylvania Dept. of Environmental Resources Concerning Analytical Results.

Orloff, Kenneth. October 1989. Health Assessment for Recticon/Allied Steel Corporation, Parkerford, Chester County, Pennsylvania. Draft Copy. Agency for Toxic Substances and Disease Registry, U.S. Public Health Service.

Roy F. Weston Inc. July 1982. Final Report, Review of Groundwater Monitoring Data, Rockwell International, Recticon, Inc., Pottstown, PA. Roy F. Weston Inc, West Chester, Pennsylvania.

Younis, Philip, January 25, 1990, On-Scene Coordinator, Environmental Protection Agency, Region III, Phone Conversation with Robert Rau, E & E.

ATTACHMENT A

NAMES & ADDRESSES OF SAMPLE LOCATIONS

Listings From Tax Map 18.5

Lot ID	Property Owner	Sample Number
14.1	"TA Herman Lederer & Son" Herman Lederer + Karl F Wells Road Parkerford, PA 19457	T0010021
14	Herman LeDerer + Anne J Wells Road Parkerford, PA 19457	T0010024
18.1	William Overfield + Mildred F Wells Road	T0010023
28	Chester Czarnecki 1009 Semnlin, Ave Pottstown, PA 19464	T0010025
25	Frederick W Hanbery + Elizabeth L Phylis Otts 307 Church Rd Norristown, PA 19401	T0010026 T0010052
23	Paul Lederer Rd #1 Pottstown, PA 19464	T0010028 T0010041
33	Robert Elliott Linfield Rd Parkerford, PA 19457	T0010030
34	Robert Elliott Linfield Rd Parkerford, PA 19457	T0010030
35	Robert Elliott Linfield Rd Parkerford, PA 19457	T0010030
36	Abram Jones + Frances A 297 Old Schuylkill Rd Spring City, PA 19475	T0010071
17	Total Inc. Rt 724 + Wells Rd Parkerford, PA 19457	T0010021

Lot ID	Property Owner	Sample Number
16.2	William Taylor & Bruce Taylor T/A Robar Syslery Box 452 Township Line Rd Bechtelsville, PA 19505	T0010055
8	Wilbert & Ruth Letter	T0010056
68.1	Thomas R Orosz + Marian N. Side Franklin Ave	T0010073
68.2	Edith Northack Franklin Ave	T0010075
68.2A	Edith Northack Franklin Ave	T0010075
68.5	Joseph T Rose Gelete 615 Franklin Ave	T0010074
72.1	Palmer Williamson + Juanita	T0010069
73	Mr. Randy Artman P.O. Box 148 Parkerford, PA	T0010068
74	Philip Levering + Joanne Old Schuylkill Rd	T0010067
75	Vernon Snaith + Helen	T0010066
77	Kenneth Symms + Charlotte Box 107 Old Schuylkill Rd	T0010065
79	Howard Shaner + Sara Old Schuylkill Rd	T0010062
80	Michael Gormish + Charlotte P.O. Box 464 Old Schuylkill Rd	T0010063
84.1	Thomas Simms + Judin Transport Systems Inc. Route 724 Parkerford, PA	T0010043
81	Robert Hertel Parkerford, PA	T0010054

Lot ID	Property Owner	Sample Number
84.2	C/O Gambone Bros Dev 1030 W Germantown Pk Fairview Village, PA 19409 or Bell Telephone Parkerford, PA	T0010042
84	High View Gardens Inc. C/O Gambone Bros Dev 1030 W Germantown Pk Fairview Village, PA 19409 or Coventry Kitchens Inc. Parkerford, PA	T0010037
83	Douglas Hartranft Box 97 Parkerford, PA	T0010050
83.1	Esther Hetrick Box 62 Parkerford, PA	T0010053
82	Catherine Leighton + Robert Old Schyukill Rd. Parkerford, PA	T0010049
85	Adam DeFrancesco Rt 724 + Wells Rd P.O. Box 312	T0010038
85.3	John Peronto + Dorothy 13 Flintshine Rd Malvern, PA 19355 or Ches-Mart Carpet Parkerford, PA	T0010036
85.4	Paul Lederer + Herbert Landis Rt 724 Parkerford, PA	T0010039
85.1	Leisure Equipment Inc. Rt 724 Parkerford, PA	T0010039
85.2	Daniel F Dipasquale Old Schuylkill Rd	T0010047

Lot ID	Property Owner	Sample Number
85.2A	Richard Heylmun + Sara Box 475 Old Schuylkill Rd.	T0010046
86	Ernest Overdorf Old Schuylkill Rd.+ Wells or Tysons Body Shop Parkerford	T0010045
119	Richard + Patricia Robinson Box 287	T0010031
120	Alfred + Helen Shantz	T0010032
121	Kenneth + Mary Lessig	T0010034
122	Richard + Dorothy Shantz	T0010035
123	Robert Townsend	T0010048

Listings From Tax Map 18.5F

4	Rinehart W Atlee & Carolyn J Box 1 Parkerford, PA 19457	T0010072
5	Monahan Malcolm C & Darlyn J P.O. Box 75 Parkerford, PA 19457	T0010076
9	Bell Telephone Co of PA One Parkway Phila, 2 PA 19100	T0010058
9.1	Hoffecker Mark L Box 23 Parkerford, PA 19457	T0010057
9.2	Weaver John D & Dorothy L Old Schuylkill Rd Parkerford, PA 19457	T0010059

Lot ID	Property Owner	Sample Number
10	Lederer Paul O Rd #1 Pottstown, PA 19464 or Pence Countertops	T0010040
11.1	Schaeffer Alice Parke Old Schuylkill Rd Parkerford, PA 19457	T0010070
13	Raspen F J P.O. Box 152 Parkerford, PA 19457	T0010060

QA/QC Sample Type	Sample Number
Blank	T0010027
Transfer Spike/Spike Dup	T0010029
Duplicate	T0010033
Spike/Spike Dup	T0010036
Blank	T0010044
Duplicate	T0010051
Duplicate	T0010061
Blank	T0010064
Spike/Spike Dup	T0010071
Transfer Blank	T0010077
Blank	T0010078

ATTACHMENT B

LETTER SENT PROPERTY OWNERS

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
841 Chestnut Building
Philadelphia, Pennsylvania 19107

December 8, 1989

Bell Telephone Co of PA
One Parkway
Phila, PA 19100

To Whom It Concerns:

As you are possibly aware, for the past several years, the U.S. Environmental Protection Agency (EPA) and the Pennsylvania Department of Environmental Resources (PDER) have been investigating organic groundwater contamination in the Parkerford, Pennsylvania area. The current focus of these studies is to characterize the amounts of specific organic contaminants found in private wells. As part of this project, the EPA would like to sample the water from your residence in Parkerford to determine if contamination is present. At this time, the EPA plans to conduct water sampling during the second week of January, 1990. The entire sampling procedure should take 10 or 15 minutes. At the conclusion of our study, you will be provided with all analytical results from samples taken at your home.

The EPA appreciates your corporation in this study; however, if scheduling problems exist, please let us know. Otherwise, an EPA representative will arrive at your Parkerford residence between January 9 and 12 to take a water sample. If you are not at home during our initial visit, we will stop by later in the week to collect a sample. Should you have any questions regarding this project, I can be reached in our Philadelphia office at (215) 597-9328. Specific questions regarding the upcoming sampling effort should be directed to Robert Rau at (206) 624-9537. Mr. Rau represents our contractor, Ecology & Environment, Inc., Seattle, WA.

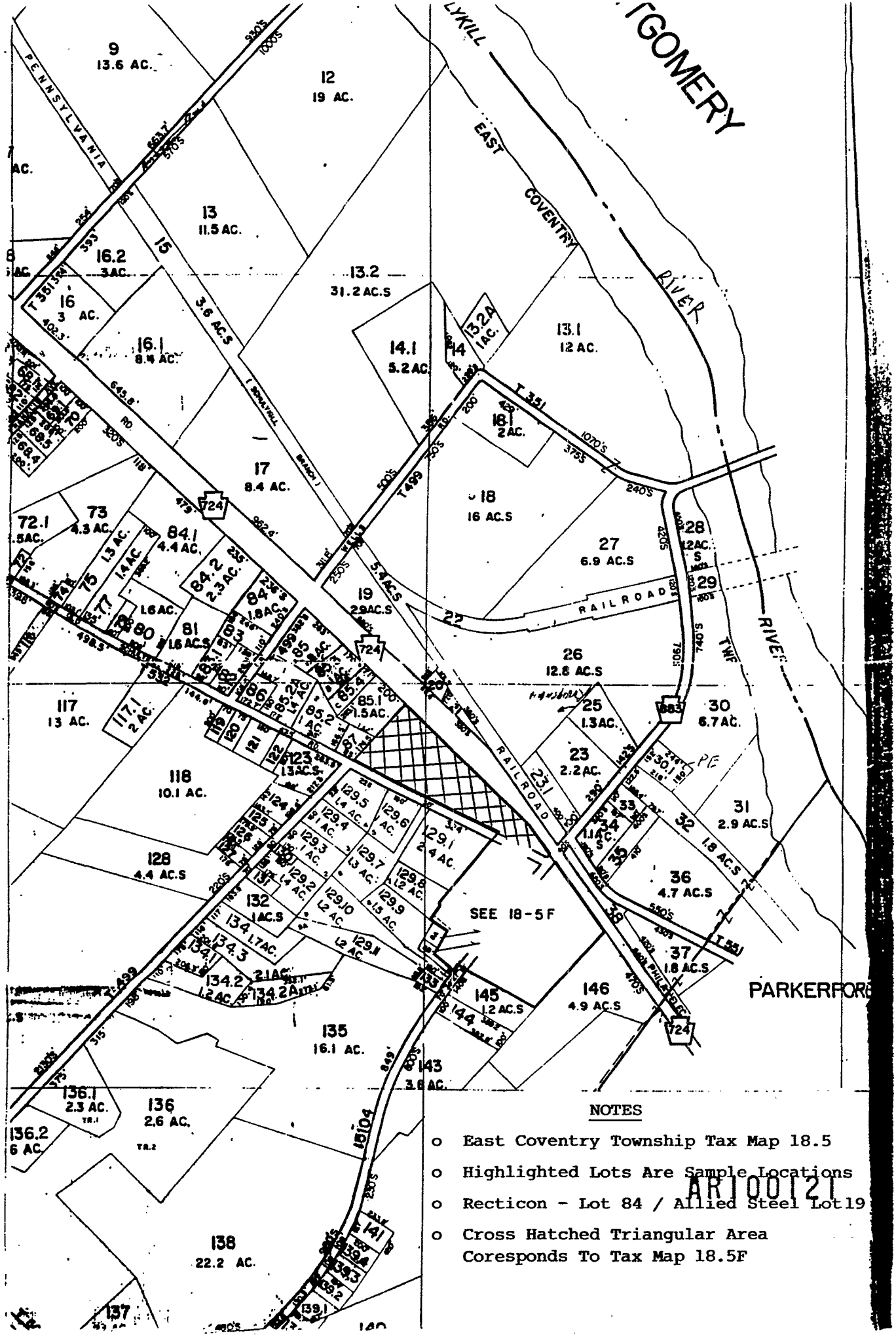
Sincerely,

for PCY

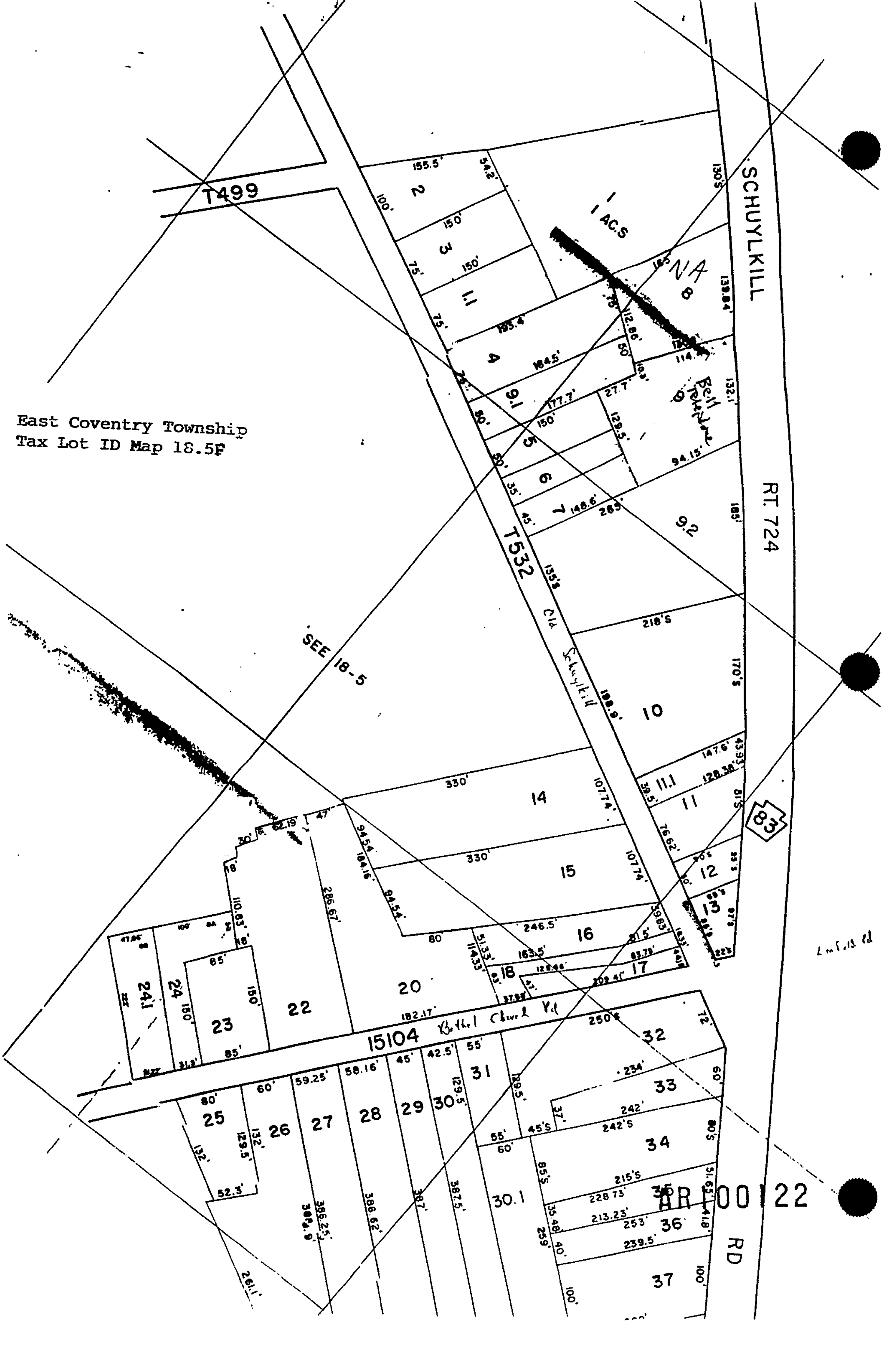
Philip C. Younis
EPA, On-Scene Coordinator

ATTACHMENT C

MAP OF SAMPLE LOCATIONS


LYKILL
EAST COVENTRY
RIVER
PENNSYLVANIA
RAILROAD
SEE 18-5F
PARKERFORD
NOTES
o East Coventry Township Tax Map 18.5
o Highlighted Lots Are Sample Locations
o Recticon - Lot 84 / Allied Steel Lot19
o Cross Hatched Triangular Area Coresponds To Tax Map 18.5F

East Coventry Township
Tax Lot ID Map 18.5F



ATTACHMENT D

ANALYTICAL RESULTS

CAS

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

CLIENT: Ecology & Environment
SUBMITTED BY: Robert Rau
PROJECT: Case #TPM-Z014-SAA
SAMPLE DESCRIPTION: Water

DATE RECEIVED: 01/09/90
DATE ANALYZED: 01/11/90
WORK ORDER #: K90072

Volatile Organics Analysis
EPA Method 8010/8020
µg/L (ppb) As Received Basis

Sample Name:		T0010021	T0010022	T0010023
Lab Code:		072-1	072-2	072-3
	MRL			
Chloromethane	0.5	ND	ND	ND
Vinyl Chloride	0.5	ND	ND	ND
Bromomethane	0.5	ND	ND	ND
Chloroethane	0.5	ND	ND	ND
Trichlorofluoromethane	0.5	ND	ND	ND
1,1-Dichloroethene	0.5	ND	ND	ND
Trichlorofluoroethane	0.5	ND	ND	ND
Methylene Chloride	0.5	ND	ND	ND
Trans 1,2-Dichloroethene	0.5	ND	ND	ND
Cis 1,2-Dichloroethene	0.5	3.4	ND	ND
1,1-Dichloroethane	0.5	ND	ND	ND
Chloroform	0.5	ND	ND	ND
1,1,1-Trichloroethane	0.5	ND	ND	ND
Carbon Tetrachloride	0.5	ND	ND	ND
Benzene	1	ND	ND	ND
1,2-Dichloroethane	0.5	ND	ND	ND
Trichloroethene	0.5	40.3	1.5	1.0
1,2-Dichloropropane	0.5	ND	ND	ND
Bromodichloromethane	0.5	ND	ND	ND
2-Chloroethylvinyl ether	0.5	ND	ND	ND
Trans 1,3-Dichloropropene	0.5	ND	ND	ND
Toluene	0.5	ND	ND	ND
Cis 1,3-Dichloropropene	0.5	ND	ND	ND
1,1,2-Trichloroethane	0.5	ND	ND	ND
Tetrachloroethene	0.5	ND	ND	ND
Dibromochloromethane	0.5	ND	ND	ND
Chlorobenzene	0.5	ND	ND	ND
Ethylbenzene	0.5	ND	ND	ND
Bromoform	0.5	ND	ND	ND
1,1,2,2-Tetrachloroethane	0.5	ND	ND	ND
1,3 Dichlorobenzene	1	ND	ND	ND
1,4 Dichlorobenzene	1	ND	ND	ND
1,2 Dichlorobenzene	1	ND	ND	ND
Total Xylenes	1	ND	ND	ND

ND means None Detected at or above the MRL
MRL means Method Reporting Limit

AR100124

Approved by Dave Edelman Date 1/23/90

1317 South 13th Avenue • P.O. Box 479 • Kelso, WA 98626 • (206) 577-7222 • Fax (206) 636-1068

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

CLIENT: Ecology & Environment
SUBMITTED BY: Robert Rau
PROJECT: Case #TPM-Z014-SAA
SAMPLE DESCRIPTION: Water

DATE RECEIVED: 01/09/90
DATE ANALYZED: 01/11/90
WORK ORDER #: K90072

Volatile Organics Analysis
EPA Method 8010/8020
µg/L (ppb) As Received Basis

Sample Name:		T0010024	T0010025	T0010026
Lab Code:		072-4	072-5	072-6
	MRL			
Chloromethane	0.5	ND	ND	ND
Vinyl Chloride	0.5	ND	ND	ND
Bromomethane	0.5	ND	ND	ND
Chloroethane	0.5	ND	ND	ND
Trichlorofluoromethane	0.5	ND	ND	ND
1,1-Dichloroethene	0.5	ND	ND	ND
Trichlorofluoroethane	0.5	ND	ND	ND
Methylene Chloride	0.5	ND	ND	ND
Trans 1,2-Dichloroethene	0.5	ND	ND	ND
Cis 1,2-Dichloroethene	0.5	ND	ND	35.2
1,1-Dichloroethane	0.5	ND	ND	ND
Chloroform	0.5	ND	ND	ND
1,1,1-Trichloroethane	0.5	ND	ND	1.1
Carbon Tetrachloride	0.5	ND	ND	ND
Benzene	1	ND	ND	ND
1,2-Dichloroethane	0.5	ND	ND	ND
Trichloroethene	0.5	1.0	ND	28.0
1,2-Dichloropropane	0.5	ND	ND	ND
Bromodichloromethane	0.5	ND	ND	ND
2-Chloroethylvinyl ether	0.5	ND	ND	ND
Trans 1,3-Dichloropropene	0.5	ND	ND	ND
Toluene	0.5	ND	0.9	ND
Cis 1,3-Dichloropropene	0.5	ND	ND	ND
1,1,2-Trichloroethane	0.5	ND	ND	ND
Tetrachloroethene	0.5	ND	ND	ND
Dibromochloromethane	0.5	ND	ND	ND
Chlorobenzene	0.5	ND	ND	ND
Ethylbenzene	0.5	ND	ND	ND
Bromoform	0.5	ND	ND	ND
1,1,2,2-Tetrachloroethane	0.5	ND	ND	ND
1,3 Dichlorobenzene	1	ND	ND	ND
1,4 Dichlorobenzene	1	ND	ND	ND
1,2 Dichlorobenzene	1	ND	ND	ND
Total Xylenes	1	ND	ND	ND

AR100125

ND means None Detected at or above the MRL
MRL means Method Reporting Limit

Approved by Dave Sherman Date 1/23/90

CAS

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

CLIENT: Ecology & Environment
SUBMITTED BY: Robert Rau
PROJECT: Case #TPM-Z014-SAA
SAMPLE DESCRIPTION: Water

DATE RECEIVED: 01/09/90
DATE ANALYZED: 01/11/90
WORK ORDER #: K90072

Volatile Organics Analysis
EPA Method 8010/8020
µg/L (ppb) As Received Basis

Sample Name:		T0010027	T0010028	T0010029
Lab Code:		072-7	072-8	072-9
	MRL			
Chloromethane	0.5	ND	ND	ND
Vinyl Chloride	0.5	ND	ND	ND
Bromomethane	0.5	ND	ND	ND
Chloroethane	0.5	ND	ND	ND
Trichlorofluoromethane	0.5	ND	ND	ND
1,1-Dichloroethene	0.5	ND	ND	ND
Trichlorofluoroethane	0.5	ND	ND	ND
Methylene Chloride	0.5	ND	ND	ND
Trans 1,2-Dichloroethene	0.5	ND	ND	ND
Cis 1,2-Dichloroethene	0.5	ND	ND	ND
1,1-Dichloroethane	0.5	ND	ND	ND
Chloroform	0.5	ND	ND	ND
1,1,1-Trichloroethane	0.5	ND	ND	ND
Carbon Tetrachloride	0.5	ND	ND	ND
Benzene	1	ND	ND	ND
1,2-Dichloroethane	0.5	ND	ND	ND
Trichloroethene	0.5	ND	ND	ND
1,2-Dichloropropane	0.5	ND	ND	ND
Bromodichloromethane	0.5	ND	ND	ND
2-Chloroethylvinyl ether	0.5	ND	ND	ND
Trans 1,3-Dichloropropene	0.5	ND	ND	ND
Toluene	0.5	ND	ND	ND
Cis 1,3-Dichloropropene	0.5	ND	ND	ND
1,1,2-Trichloroethane	0.5	ND	ND	ND
Tetrachloroethene	0.5	ND	ND	ND
Dibromochloromethane	0.5	ND	ND	ND
Chlorobenzene	0.5	ND	ND	ND
Ethylbenzene	0.5	ND	ND	ND
Bromoform	0.5	ND	ND	ND
1,1,2,2-Tetrachloroethane	0.5	ND	ND	ND
1,3 Dichlorobenzene	1	ND	ND	ND
1,4 Dichlorobenzene	1	ND	ND	ND
1,2 Dichlorobenzene	1	ND	ND	ND
Total Xylenes	1	ND	ND	ND

ND means None Detected at or above the MRL
MRL means Method Reporting Limit

AR100126

Approved by Dave Edelman Date 1/23/90

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CAS

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

CLIENT: Ecology & Environment
SUBMITTED BY: Robert Rau
PROJECT: #TPM-Z014-SAA
SAMPLE DESCRIPTION: Water

DATE RECEIVED: 01/10/90
DATE ANALYZED: 01/12/90
WORK ORDER #: K90094

Volatile Organics Analysis
EPA Method 8010/8020
µg/L (ppb)

Sample Name:		T0010030	T0010031	T0010032
Lab Code:		094-1	094-2	094-3
	MRL			
Chloromethane	0.5	ND	ND	ND
Vinyl Chloride	0.5	ND	ND	ND
Bromomethane	0.5	ND	ND	ND
Chloroethane	0.5	ND	ND	ND
1,1-Dichloroethene	0.5	ND	ND	ND
Methylene Chloride	0.5	ND	ND	ND
Trans 1,2-Dichloroethene	0.5	ND	ND	ND
Cis 1,2-Dichloroethene	0.5	ND	ND	ND
1,1-Dichloroethane	0.5	ND	ND	ND
Chloroform	0.5	ND	ND	ND
1,1,1-Trichloroethane	0.5	ND	ND	ND
Carbon Tetrachloride	0.5	ND	ND	ND
Benzene	1	ND	ND	ND
1,2-Dichloroethane	0.5	ND	ND	ND
Trichloroethene	0.5	ND	ND	ND
1,2-Dichloropropane	0.5	ND	ND	ND
Bromodichloromethane	0.5	ND	ND	ND
2-Chloroethylvinyl ether	0.5	ND	ND	ND
Trans 1,3-Dichloropropene	0.5	ND	ND	ND
Toluene	0.5	ND	ND	ND
Cis 1,3-Dichloropropene	0.5	ND	ND	ND
1,1,2-Trichloroethane	0.5	ND	ND	ND
Tetrachloroethene	0.5	ND	ND	ND
Dibromochloromethane	0.5	ND	ND	ND
Chlorobenzene	0.5	ND	ND	ND
Ethylbenzene	0.5	ND	ND	ND
Bromoform	0.5	ND	ND	ND
1,1,2,2-Tetrachloroethane	0.5	ND	ND	ND
1,3 Dichlorobenzene	1	ND	ND	ND
1,4 Dichlorobenzene	1	ND	ND	ND
1,2 Dichlorobenzene	1	ND	ND	ND
Total Xylenes	1	ND	ND	ND

AR100127

ND means None Detected at or above the MRL
MRL means Method Reporting Limit

Approved by Dave Eldridge Date 1/24/90

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CAS

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

CLIENT: Ecology & Environment
SUBMITTED BY: Robert Rau
PROJECT: #TPM-Z014-SAA
SAMPLE DESCRIPTION: Water

DATE RECEIVED: 01/10/90
DATE ANALYZED: 01/12/90
WORK ORDER #: K90094

Volatile Organics Analysis
EPA Method 8010/8020
µg/L (ppb)

Sample Name: / Lab Code:	MRL	T0010033 094-4	T0010034 094-5	T0010035 094-6
Chloromethane	0.5	ND	ND	ND
Vinyl Chloride	0.5	ND	ND	ND
Bromomethane	0.5	ND	ND	ND
Chloroethane	0.5	ND	ND	ND
1,1-Dichloroethene	0.5	ND	ND	ND
Methylene Chloride	0.5	ND	ND	ND
Trans 1,2-Dichloroethene	0.5	ND	ND	ND
Cis 1,2-Dichloroethene	0.5	ND	ND	ND
1,1-Dichloroethane	0.5	ND	ND	ND
Chloroform	0.5	ND	ND	ND
1,1,1-Trichloroethane	0.5	ND	ND	ND
Carbon Tetrachloride	0.5	ND	ND	ND
Benzene	1	ND	ND	ND
1,2-Dichloroethane	0.5	ND	ND	ND
Trichloroethene	0.5	ND	ND	ND
1,2-Dichloropropane	0.5	ND	ND	ND
Bromodichloromethane	0.5	ND	ND	ND
2-Chloroethylvinyl ether	0.5	ND	ND	ND
Trans 1,3-Dichloropropene	0.5	ND	ND	ND
Toluene	0.5	ND	ND	ND
Cis 1,3-Dichloropropene	0.5	ND	ND	ND
1,1,2-Trichloroethane	0.5	ND	ND	ND
Tetrachloroethene	0.5	ND	ND	ND
Dibromochloromethane	0.5	ND	ND	ND
Chlorobenzene	0.5	ND	ND	ND
Ethylbenzene	0.5	ND	ND	ND
Bromoform	0.5	ND	ND	ND
1,1,2,2-Tetrachloroethane	0.5	ND	ND	ND
1,3 Dichlorobenzene	1	ND	ND	ND
1,4 Dichlorobenzene	1	ND	ND	ND
1,2 Dichlorobenzene	1	ND	ND	ND
Total Xylenes	1	ND	ND	ND

ND means None Detected at or above the MRL
MRL means Method Reporting Limit

AR100128

Approved by Dave Erdman / Date 1/24/90

CAS

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

CLIENT: Ecology & Environment
SUBMITTED BY: Robert Rau
PROJECT: #TPM-Z014-SAA
SAMPLE DESCRIPTION: Water

DATE RECEIVED: 01/10/90
DATE ANALYZED: 01/12/90
WORK ORDER #: K90094

Volatile Organics Analysis
EPA Method 8010/8020
µg/L (ppb)

Sample Name: / Lab Code:	MRL	T0010036 094-7	T0010037 094-8	T0010038 094-9
Chloromethane	0.5	ND	ND	ND
Vinyl Chloride	0.5	ND	ND	ND
Bromomethane	0.5	ND	ND	ND
Chloroethane	0.5	ND	ND	ND
1,1-Dichloroethene	0.5	ND	ND	ND
Methylene Chloride	0.5	ND	ND	ND
Trans 1,2-Dichloroethene	0.5	ND	ND	ND
Cis 1,2-Dichloroethene	0.5	ND	ND	5.4
1,1-Dichloroethane	0.5	ND	ND	ND
Chloroform	0.5	ND	ND	ND
1,1,1-Trichloroethane	0.5	5.6	ND	ND
Carbon Tetrachloride	0.5	ND	ND	ND
Benzene	1	ND	ND	ND
1,2-Dichloroethane	0.5	ND	ND	ND
Trichloroethene	0.5	2.2	ND	33.7
1,2-Dichloropropane	0.5	ND	ND	ND
Bromodichloromethane	0.5	ND	ND	ND
2-Chloroethylvinyl ether	0.5	ND	ND	ND
Trans 1,3-Dichloropropene	0.5	ND	ND	ND
Toluene	0.5	ND	ND	ND
Cis 1,3-Dichloropropene	0.5	ND	ND	ND
1,1,2-Trichloroethane	0.5	ND	ND	ND
Tetrachloroethene	0.5	ND	ND	ND
Dibromochloromethane	0.5	ND	ND	ND
Chlorobenzene	0.5	ND	ND	ND
Ethylbenzene	0.5	ND	ND	ND
Bromoform	0.5	ND	ND	ND
1,1,2,2-Tetrachloroethane	0.5	ND	ND	ND
1,3 Dichlorobenzene	1	ND	ND	ND
1,4 Dichlorobenzene	1	ND	ND	ND
1,2 Dichlorobenzene	1	ND	ND	ND
Total Xylenes	1	ND	ND	ND

ND means None Detected at or above the MRL
MRL means Method Reporting Limit

AR100129

Approved by Dave Erickson Date 1/24/90

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CAS

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

CLIENT: Ecology & Environment
SUBMITTED BY: Robert Rau
PROJECT: #TPM-Z014-SAA
SAMPLE DESCRIPTION: Water

DATE RECEIVED: 01/10/90
DATE ANALYZED: 01/12/90
WORK ORDER #: K90094

Volatile Organics Analysis
EPA Method 8010/8020
µg/L (ppb)

Sample Name:		T0010039	T0010040	T0010041
Lab Code:		094-10	094-11	094-12
	MRL			
Chloromethane	0.5	ND	ND	ND
Vinyl Chloride	0.5	ND	ND	ND
Bromomethane	0.5	ND	ND	ND
Chloroethane	0.5	ND	ND	ND
1,1-Dichloroethene	0.5	ND	ND	ND
Methylene Chloride	0.5	ND	ND	ND
Trans 1,2-Dichloroethene	0.5	ND	ND	ND
Cis 1,2-Dichloroethene	0.5	1.1	ND	ND
1,1-Dichloroethane	0.5	ND	ND	ND
Chloroform	0.5	ND	ND	ND
1,1,1-Trichloroethane	0.5	3.8	ND	ND
Carbon Tetrachloride	0.5	ND	ND	ND
Benzene	1	ND	ND	ND
1,2-Dichloroethane	0.5	ND	ND	ND
Trichloroethene	0.5	17.6	ND	ND
1,2-Dichloropropane	0.5	ND	ND	ND
Bromodichloromethane	0.5	ND	ND	ND
2-Chloroethylvinyl ether	0.5	ND	ND	ND
Trans 1,3-Dichloropropene	0.5	ND	ND	ND
Toluene	0.5	ND	3.2	ND
Cis 1,3-Dichloropropene	0.5	ND	ND	ND
1,1,2-Trichloroethane	0.5	ND	ND	ND
Tetrachloroethene	0.5	ND	ND	ND
Dibromochloromethane	0.5	ND	ND	ND
Chlorobenzene	0.5	ND	ND	ND
Ethylbenzene	0.5	ND	ND	ND
Bromoform	0.5	ND	ND	ND
1,1,2,2-Tetrachloroethane	0.5	ND	ND	ND
1,3 Dichlorobenzene	1	ND	ND	ND
1,4 Dichlorobenzene	1	ND	ND	ND
1,2 Dichlorobenzene	1	ND	ND	ND
Total Xylenes	1	ND	ND	ND

ND means None Detected at or above the MRL
MRL means Method Reporting Limit

AR100130

Approved by Dave Ehlman Date 1/24/90

CAS

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

CLIENT: Ecology & Environment
SUBMITTED BY: Robert Rau
PROJECT: #TPM-Z014-SAA
SAMPLE DESCRIPTION: Water

DATE RECEIVED: 01/10/90
DATE ANALYZED: 01/12/90
WORK ORDER #: K90094

Volatile Organics Analysis
EPA Method 8010/8020
µg/L (ppb)

Sample Name: / Lab Code:	MRL	T0010042 094-13	T0010043 094-14	T0010044 094-15
Chloromethane	0.5	ND	ND	ND
Vinyl Chloride	0.5	ND	ND	ND
Bromomethane	0.5	ND	ND	ND
Chloroethane	0.5	ND	ND	ND
1,1-Dichloroethene	0.5	ND	ND	ND
Methylene Chloride	0.5	ND	ND	ND
Trans 1,2-Dichloroethene	0.5	ND	ND	ND
Cis 1,2-Dichloroethene	0.5	81.3	ND	ND
1,1-Dichloroethane	0.5	ND	ND	ND
Chloroform	0.5	ND	ND	ND
1,1,1-Trichloroethane	0.5	ND	ND	ND
Carbon Tetrachloride	0.5	ND	ND	ND
Benzene	1	ND	ND	ND
1,2-Dichloroethane	0.5	ND	ND	ND
Trichloroethene	0.5	160	ND	ND
1,2-Dichloropropane	0.5	ND	ND	ND
Bromodichloromethane	0.5	ND	ND	ND
2-Chloroethylvinyl ether	0.5	ND	ND	ND
Trans 1,3-Dichloropropene	0.5	ND	ND	ND
Toluene	0.5	ND	ND	ND
Cis 1,3-Dichloropropene	0.5	ND	ND	ND
1,1,2-Trichloroethane	0.5	ND	ND	ND
Tetrachloroethene	0.5	ND	ND	ND
Dibromochloromethane	0.5	ND	ND	ND
Chlorobenzene	0.5	ND	ND	ND
Ethylbenzene	0.5	ND	ND	ND
Bromoform	0.5	ND	ND	ND
1,1,2,2-Tetrachloroethane	0.5	ND	ND	ND
1,3 Dichlorobenzene	1	ND	ND	ND
1,4 Dichlorobenzene	1	ND	ND	ND
1,2 Dichlorobenzene	1	ND	ND	ND
Total Xylenes	1	ND	ND	ND

AR100131

ND means None Detected at or above the MRL
MRL means Method Reporting Limit

Approved by Dave Eshleman / Date 1/24/90

CAS

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

CLIENT: Ecology & Environment
SUBMITTED BY: Robert Rau
PROJECT: #TPM-2014-SAA/TPM-8910-002
SAMPLE DESCRIPTION: Water

DATE RECEIVED: 01/11/90
DATE ANALYZED: 01/13/90
WORK ORDER #: K90103

Volatile Organics Analysis
EPA Methods 8010/8020
µg/L (ppb)

Sample Name:		T0010045	T0010046	T0010047
Lab Code:		103-1	103-2	103-3
	MRL			
Chloromethane	0.5	ND	ND	ND
Vinyl Chloride	0.5	ND	ND	ND
Bromomethane	0.5	ND	ND	ND
Chloroethane	0.5	ND	ND	ND
1,1-Dichloroethene	0.5	ND	ND	ND
Methylene Chloride	0.5	ND	ND	ND
Trans 1,2-Dichloroethene	0.5	ND	ND	ND
Cis 1,2-Dichloroethene	0.5	ND	ND	ND
1,1-Dichloroethane	0.5	ND	ND	ND
Chloroform	0.5	ND	ND	ND
1,1,1-Trichloroethane	0.5	ND	ND	ND
Carbon Tetrachloride	0.5	ND	ND	ND
Benzene	1	ND	ND	ND
1,2-Dichloroethane	0.5	ND	ND	ND
Trichloroethene	0.5	ND	ND	ND
1,2-Dichloropropane	0.5	ND	ND	ND
Bromodichloromethane	0.5	ND	ND	ND
2-Chloroethylvinyl ether	0.5	ND	ND	ND
Trans 1,3-Dichloropropene	0.5	ND	ND	ND
Toluene	0.5	4.8	ND	ND
Cis 1,3-Dichloropropene	0.5	ND	ND	ND
1,1,2-Trichloroethane	0.5	ND	ND	ND
Tetrachloroethene	0.5	ND	ND	ND
Dibromochloromethane	0.5	ND	ND	ND
Chlorobenzene	0.5	ND	ND	ND
Ethylbenzene	0.5	ND	ND	ND
Bromoform	0.5	ND	ND	ND
1,1,2,2-Tetrachloroethane	0.5	ND	ND	ND
1,3 Dichlorobenzene	1	ND	ND	ND
1,4 Dichlorobenzene	1	ND	ND	ND
1,2 Dichlorobenzene	1	ND	ND	ND
Total Xylenes	1	1.1	ND	ND

AR100132

ND means None Detected at or above the MRL
MRL means Method Reporting Limit

Approved by Dave Ekelman / Date 1/25/90

CAS

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

CLIENT: Ecology & Environment
SUBMITTED BY: Robert Rau
PROJECT: #TPM-Z014-SAA/TPM-8910-002
SAMPLE DESCRIPTION: Water

DATE RECEIVED: 01/11/90
DATE ANALYZED: 01/13/90
WORK ORDER #: K90103

Volatile Organics Analysis
EPA Methods 8010/8020
µg/L (ppb)

Sample Name:		T0010048	T0010049	T0010050
Lab Code:		103-4	103-5	103-6
	MRL			
Chloromethane	0.5	ND	ND	ND
Vinyl Chloride	0.5	ND	ND	ND
Bromomethane	0.5	ND	ND	ND
Chloroethane	0.5	ND	ND	ND
1,1-Dichloroethene	0.5	ND	ND	ND
Methylene Chloride	0.5	ND	ND	ND
Trans 1,2-Dichloroethene	0.5	ND	ND	ND
Cis 1,2-Dichloroethene	0.5	ND	ND	ND
1,1-Dichloroethane	0.5	ND	ND	ND
Chloroform	0.5	ND	ND	ND
1,1,1-Trichloroethane	0.5	ND	ND	ND
Carbon Tetrachloride	0.5	ND	ND	ND
Benzene	1	ND	ND	ND
1,2-Dichloroethane	0.5	ND	ND	ND
Trichloroethene	0.5	ND	ND	ND
1,2-Dichloropropane	0.5	ND	ND	ND
Bromodichloromethane	0.5	ND	ND	ND
2-Chloroethylvinyl ether	0.5	ND	ND	ND
Trans 1,3-Dichloropropene	0.5	ND	ND	ND
Toluene	0.5	ND	ND	ND
Cis 1,3-Dichloropropene	0.5	ND	ND	ND
1,1,2-Trichloroethane	0.5	ND	ND	ND
Tetrachloroethene	0.5	ND	ND	ND
Dibromochloromethane	0.5	ND	ND	ND
Chlorobenzene	0.5	ND	ND	ND
Ethylbenzene	0.5	ND	ND	ND
Bromoform	0.5	ND	ND	ND
1,1,2,2-Tetrachloroethane	0.5	ND	ND	ND
1,3 Dichlorobenzene	1	ND	ND	ND
1,4 Dichlorobenzene	1	ND	ND	ND
1,2 Dichlorobenzene	1	ND	ND	ND
Total Xylenes	1	ND	ND	ND

AR100133

ND means None Detected at or above the MRL
MRL means Method Reporting Limit

Approved by Dave Eldridge Date 1/25/90

CAS

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

CLIENT: Ecology & Environment
SUBMITTED BY: Robert Rau
PROJECT: #TPM-Z014-SAA/TPM-8910-002
SAMPLE DESCRIPTION: Water

DATE RECEIVED: 01/11/90
DATE ANALYZED: 01/13/90
WORK ORDER #: K90103

Volatile Organics Analysis
EPA Methods 8010/8020
µg/L (ppb)

Sample Name: / Lab Code:	MRL	T0010051 103-7	T0010052 103-8	T0010053 103-9
Chloromethane	0.5	ND	ND	ND
Vinyl Chloride	0.5	ND	ND	ND
Bromomethane	0.5	ND	ND	ND
Chloroethane	0.5	ND	ND	ND
1,1-Dichloroethene	0.5	ND	ND	ND
Methylene Chloride	0.5	ND	ND	ND
Trans 1,2-Dichloroethene	0.5	ND	ND	ND
Cis 1,2-Dichloroethene	0.5	ND	32.3	ND
1,1-Dichloroethane	0.5	ND	ND	ND
Chloroform	0.5	ND	ND	ND
1,1,1-Trichloroethane	0.5	ND	0.9	ND
Carbon Tetrachloride	0.5	ND	ND	ND
Benzene	1	ND	ND	ND
1,2-Dichloroethane	0.5	ND	ND	ND
Trichloroethene	0.5	ND	35.8	ND
1,2-Dichloropropane	0.5	ND	ND	ND
Bromodichloromethane	0.5	ND	ND	ND
2-Chloroethylvinyl ether	0.5	ND	ND	ND
Trans 1,3-Dichloropropene	0.5	ND	ND	ND
Toluene	0.5	ND	ND	ND
Cis 1,3-Dichloropropene	0.5	ND	ND	ND
1,1,2-Trichloroethane	0.5	ND	ND	ND
Tetrachloroethene	0.5	ND	ND	ND
Dibromochloromethane	0.5	ND	ND	ND
Chlorobenzene	0.5	ND	ND	ND
Ethylbenzene	0.5	ND	ND	ND
Bromoform	0.5	ND	ND	ND
1,1,2,2-Tetrachloroethane	0.5	ND	ND	ND
1,3 Dichlorobenzene	1	ND	ND	ND
1,4 Dichlorobenzene	1	ND	ND	ND
1,2 Dichlorobenzene	1	ND	ND	ND
Total Xylenes	1	ND	ND	ND

ND means None Detected at or above the MRL
MRL means Method Reporting Limit

AR100134

Approved by Dave Skelton Date 1/25/90

CAS

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

CLIENT: Ecology & Environment
SUBMITTED BY: Robert Rau
PROJECT: #TPM-Z014-SAA/TPM-8910-002
SAMPLE DESCRIPTION: Water

DATE RECEIVED: 01/11/90
DATE ANALYZED: 01/13/90
WORK ORDER #: K90103

Volatile Organics Analysis
EPA Methods 8010/8020
µg/L (ppb)

Sample Name:		T0010054	T0010055	T0010056
Lab Code:		103-10	103-11	103-12
	MRL			
Chloromethane	0.5	ND	ND	ND
Vinyl Chloride	0.5	ND	ND	ND
Bromomethane	0.5	ND	ND	ND
Chloroethane	0.5	ND	ND	ND
1,1-Dichloroethene	0.5	ND	ND	ND
Methylene Chloride	0.5	ND	ND	ND
Trans 1,2-Dichloroethene	0.5	ND	ND	ND
Cis 1,2-Dichloroethene	0.5	ND	ND	ND
1,1-Dichloroethane	0.5	ND	ND	ND
Chloroform	0.5	ND	ND	ND
1,1,1-Trichloroethane	0.5	ND	ND	ND
Carbon Tetrachloride	0.5	ND	ND	ND
Benzene	1	ND	ND	ND
1,2-Dichloroethane	0.5	ND	ND	ND
Trichloroethene	0.5	ND	ND	ND
1,2-Dichloropropane	0.5	ND	ND	ND
Bromodichloromethane	0.5	ND	ND	ND
2-Chloroethylvinyl ether	0.5	ND	ND	ND
Trans 1,3-Dichloropropene	0.5	ND	ND	ND
Toluene	0.5	ND	ND	ND
Cis 1,3-Dichloropropene	0.5	ND	ND	ND
1,1,2-Trichloroethane	0.5	ND	ND	ND
Tetrachloroethene	0.5	ND	ND	ND
Dibromochloromethane	0.5	ND	ND	ND
Chlorobenzene	0.5	ND	ND	ND
Ethylbenzene	0.5	ND	ND	ND
Bromoform	0.5	ND	ND	ND
1,1,2,2-Tetrachloroethane	0.5	ND	ND	ND
1,3 Dichlorobenzene	1	ND	ND	ND
1,4 Dichlorobenzene	1	ND	ND	ND
1,2 Dichlorobenzene	1	ND	ND	ND
Total Xylenes	1	ND	ND	ND

ND means None Detected at or above the MRL
MRL means Method Reporting Limit

AR100135

Approved by Dave Schuman Date 1/25/90

CAS

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

CLIENT: Ecology & Environment
SUBMITTED BY: Robert Rau
PROJECT: #TPM-Z014-SAA/TPM-8910-002
SAMPLE DESCRIPTION: Water

DATE RECEIVED: 01/11/90
DATE ANALYZED: 01/13/90
WORK ORDER #: K90103

Volatile Organics Analysis
EPA Methods 8010/8020
µg/L (ppb)

Sample Name:		T0010057	T0010058	T0010059
Lab Code:		103-13	103-14	103-15
	MRL			
Chloromethane	0.5	ND	ND	ND
Vinyl Chloride	0.5	ND	ND	ND
Bromomethane	0.5	ND	ND	ND
Chloroethane	0.5	ND	ND	ND
1,1-Dichloroethene	0.5	ND	ND	ND
Methylene Chloride	0.5	ND	ND	ND
Trans 1,2-Dichloroethene	0.5	ND	ND	ND
Cis 1,2-Dichloroethene	0.5	ND	ND	ND
1,1-Dichloroethane	0.5	ND	ND	ND
Chloroform	0.5	ND	ND	ND
1,1,1-Trichloroethane	0.5	ND	ND	ND
Carbon Tetrachloride	0.5	ND	ND	ND
Benzene	1	ND	ND	ND
1,2-Dichloroethane	0.5	ND	ND	ND
Trichloroethene	0.5	ND	ND	ND
1,2-Dichloropropane	0.5	ND	ND	ND
Bromodichloromethane	0.5	ND	ND	ND
2-Chloroethylvinyl ether	0.5	ND	ND	ND
Trans 1,3-Dichloropropene	0.5	ND	ND	ND
Toluene	0.5	ND	ND	ND
Cis 1,3-Dichloropropene	0.5	ND	ND	ND
1,1,2-Trichloroethane	0.5	ND	ND	ND
Tetrachloroethene	0.5	ND	ND	ND
Dibromochloromethane	0.5	ND	ND	ND
Chlorobenzene	0.5	ND	ND	ND
Ethylbenzene	0.5	ND	ND	ND
Bromoform	0.5	ND	ND	ND
1,1,2,2-Tetrachloroethane	0.5	ND	ND	ND
1,3 Dichlorobenzene	1	ND	ND	ND
1,4 Dichlorobenzene	1	ND	ND	ND
1,2 Dichlorobenzene	1	ND	ND	ND
Total Xylenes	1	ND	ND	ND

ND means None Detected at or above the MRL
MRL means Method Reporting Limit

AR100136

Approved by Dave Shulman / Date 1/25/90

CAS

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

CLIENT: Ecology & Environment
SUBMITTED BY: Robert Rau
PROJECT: #TPM-Z014-SAA/TPM-8910-002
SAMPLE DESCRIPTION: Water

DATE RECEIVED: 01/11/90
DATE ANALYZED: 01/13/90
WORK ORDER #: K90103

Volatile Organics Analysis
EPA Methods 8010/8020
µg/L (ppb)

Sample Name:		T0010060	T0010061	T0010062
Lab Code:		103-16	103-17	103-18
	MRL			
Chloromethane	0.5	ND	ND	ND
Vinyl Chloride	0.5	ND	ND	ND
Bromomethane	0.5	ND	ND	ND
Chloroethane	0.5	ND	ND	ND
1,1-Dichloroethene	0.5	ND	ND	ND
Methylene Chloride	0.5	ND	ND	ND
Trans 1,2-Dichloroethene	0.5	ND	ND	ND
Cis 1,2-Dichloroethene	0.5	ND	ND	ND
1,1-Dichloroethane	0.5	ND	ND	ND
Chloroform	0.5	ND	ND	ND
1,1,1-Trichloroethane	0.5	ND	ND	ND
Carbon Tetrachloride	0.5	ND	ND	ND
Benzene	1	ND	ND	ND
1,2-Dichloroethane	0.5	ND	ND	ND
Trichloroethene	0.5	ND	ND	ND
1,2-Dichloropropane	0.5	ND	ND	ND
Bromodichloromethane	0.5	ND	ND	ND
2-Chloroethylvinyl ether	0.5	ND	ND	ND
Trans 1,3-Dichloropropene	0.5	ND	ND	ND
Toluene	0.5	ND	ND	ND
Cis 1,3-Dichloropropene	0.5	ND	ND	ND
1,1,2-Trichloroethane	0.5	ND	ND	ND
Tetrachloroethene	0.5	ND	ND	ND
Dibromochloromethane	0.5	ND	ND	ND
Chlorobenzene	0.5	ND	ND	ND
Ethylbenzene	0.5	ND	ND	ND
Bromoform	0.5	ND	ND	ND
1,1,2,2-Tetrachloroethane	0.5	ND	ND	ND
1,3 Dichlorobenzene	1	ND	ND	ND
1,4 Dichlorobenzene	1	ND	ND	ND
1,2 Dichlorobenzene	1	ND	ND	ND
Total Xylenes	1	ND	ND	ND

AR100137

ND means None Detected at or above the MRL
MRL means Method Reporting Limit

Approved by Doug Skilman Date 1/25/90

CAS

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

CLIENT: Ecology & Environment
SUBMITTED BY: Robert Rau
PROJECT: #TPM-Z014-SAA/TPM-8910-002
SAMPLE DESCRIPTION: Water

DATE RECEIVED: 01/11/90
DATE ANALYZED: 01/13/90
WORK ORDER #: K90103

Volatile Organics Analysis
EPA Methods 8010/8020
µg/L (ppb)

Sample Name:		T0010063	T0010064	Method Blank
Lab Code:		103-19	103-20	0113W3
	MRL			
Chloromethane	0.5	ND	ND	ND
Vinyl Chloride	0.5	ND	ND	ND
Bromomethane	0.5	ND	ND	ND
Chloroethane	0.5	ND	ND	ND
1,1-Dichloroethene	0.5	ND	ND	ND
Methylene Chloride	0.5	ND	ND	ND
Trans 1,2-Dichloroethene	0.5	ND	ND	ND
Cis 1,2-Dichloroethene	0.5	ND	ND	ND
1,1-Dichloroethane	0.5	ND	ND	ND
Chloroform	0.5	ND	ND	ND
1,1,1-Trichloroethane	0.5	ND	ND	ND
Carbon Tetrachloride	0.5	ND	ND	ND
Benzene	1	ND	ND	ND
1,2-Dichloroethane	0.5	ND	ND	ND
Trichloroethene	0.5	ND	ND	ND
1,2-Dichloropropane	0.5	ND	ND	ND
Bromodichloromethane	0.5	ND	ND	ND
2-Chloroethylvinyl ether	0.5	ND	ND	ND
Trans 1,3-Dichloropropene	0.5	ND	ND	ND
Toluene	0.5	ND	ND	ND
Cis 1,3-Dichloropropene	0.5	ND	ND	ND
1,1,2-Trichloroethane	0.5	ND	ND	ND
Tetrachloroethene	0.5	ND	ND	ND
Dibromochloromethane	0.5	ND	ND	ND
Chlorobenzene	0.5	ND	ND	ND
Ethylbenzene	0.5	ND	ND	ND
Bromoform	0.5	ND	ND	ND
1,1,2,2-Tetrachloroethane	0.5	ND	ND	ND
1,3 Dichlorobenzene	1	ND	ND	ND
1,4 Dichlorobenzene	1	ND	ND	ND
1,2 Dichlorobenzene	1	ND	ND	ND
Total Xylenes	1	ND	ND	ND

ND means None Detected at or above the MRL
MRL means Method Reporting Limit

AR100138

Approved by Dave Sherman / Date 1/25/90

1317 South 13th Avenue • P.O. Box 479 • Kelso, WA 98626 • (206) 577-7222 • Fax (206) 636-1068

COLUMBIA ANALYTICAL SERVICES, INC.

CAS

Analytical Report

CLIENT: Ecology & Environment
SUBMITTED BY: Robert Rau
PROJECT: #TPM-Z014-SAA/TPM-8910-002
SAMPLE DESCRIPTION: Water

DATE RECEIVED: 01/12/90
DATE ANALYZED: 01/14/90
WORK ORDER #: K90119

Volatile Organics Analysis
EPA Methods 8010/8020
µg/L (ppb)

Sample Name:		T0010065	T0010066	T0010067
Lab Code:		119-1	119-2	119-3
	MRL			
Chloromethane	0.5	ND	ND	ND
Vinyl Chloride	0.5	ND	ND	ND
Bromomethane	0.5	ND	ND	ND
Chloroethane	0.5	ND	ND	ND
1,1-Dichloroethene	0.5	ND	ND	ND
Methylene Chloride	0.5	ND	ND	ND
Trans 1,2-Dichloroethene	0.5	ND	ND	ND
Cis 1,2-Dichloroethene	0.5	ND	ND	ND
1,1-Dichloroethane	0.5	ND	ND	ND
Chloroform	0.5	ND	ND	ND
1,1,1-Trichloroethane	0.5	ND	ND	ND
Carbon Tetrachloride	0.5	ND	ND	ND
Benzene	1	ND	ND	ND
1,2-Dichloroethane	0.5	ND	ND	ND
Trichloroethene	0.5	ND	ND	ND
1,2-Dichloropropane	0.5	ND	ND	ND
Bromodichloromethane	0.5	ND	ND	ND
2-Chloroethylvinyl ether	0.5	ND	ND	ND
Trans 1,3-Dichloropropene	0.5	ND	ND	ND
Toluene	0.5	ND	ND	ND
Cis 1,3-Dichloropropene	0.5	ND	ND	ND
1,1,2-Trichloroethane	0.5	ND	ND	ND
Tetrachloroethene	0.5	ND	ND	ND
Dibromochloromethane	0.5	ND	ND	ND
Chlorobenzene	0.5	ND	ND	ND
Ethylbenzene	0.5	ND	ND	ND
Bromoform	0.5	ND	ND	ND
1,1,2,2-Tetrachloroethane	0.5	ND	ND	ND
1,3 Dichlorobenzene	1	ND	ND	ND
1,4 Dichlorobenzene	1	ND	ND	ND
1,2 Dichlorobenzene	1	ND	ND	ND
Total Xylenes	1	ND	ND	ND

AR100139

ND means None Detected at or above the MRL
MRL means Method Reporting Limit

Approved by Dave Eshleman Date 1/25/90

COLUMBIA ANALYTICAL SERVICES, INC.

CAS

Analytical Report

CLIENT: Ecology & Environment
SUBMITTED BY: Robert Rau
PROJECT: #TPM-Z014-SAA/TPM-8910-002
SAMPLE DESCRIPTION: Water

DATE RECEIVED: 01/12/90
DATE ANALYZED: 01/14/90
WORK ORDER #: K90119

Volatile Organics Analysis
EPA Methods 8010/8020
µg/L (ppb)

Sample Name:		T0010068	T0010069	T0010070
Lab Code:		119-4	119-5	119-6
	MRL			
Chloromethane	0.5	ND	ND	ND
Vinyl Chloride	0.5	ND	ND	ND
Bromomethane	0.5	ND	ND	ND
Chloroethane	0.5	ND	ND	ND
1,1-Dichloroethene	0.5	ND	ND	ND
Methylene Chloride	0.5	ND	ND	ND
Trans 1,2-Dichloroethene	0.5	ND	ND	ND
Cis 1,2-Dichloroethene	0.5	ND	ND	ND
1,1-Dichloroethane	0.5	ND	ND	ND
Chloroform	0.5	ND	ND	ND
1,1,1-Trichloroethane	0.5	ND	ND	ND
Carbon Tetrachloride	0.5	ND	ND	ND
Benzene	1	ND	ND	ND
1,2-Dichloroethane	0.5	ND	ND	ND
Trichloroethene	0.5	ND	ND	ND
1,2-Dichloropropane	0.5	ND	ND	ND
Bromodichloromethane	0.5	ND	ND	ND
2-Chloroethylvinyl ether	0.5	ND	ND	ND
Trans 1,3-Dichloropropene	0.5	ND	ND	ND
Toluene	0.5	ND	ND	ND
Cis 1,3-Dichloropropene	0.5	ND	ND	ND
1,1,2-Trichloroethane	0.5	ND	ND	ND
Tetrachloroethene	0.5	ND	ND	ND
Dibromochloromethane	0.5	ND	ND	ND
Chlorobenzene	0.5	ND	ND	ND
Ethylbenzene	0.5	ND	ND	ND
Bromoform	0.5	ND	ND	ND
1,1,2,2-Tetrachloroethane	0.5	ND	ND	ND
1,3 Dichlorobenzene	1	ND	ND	ND
1,4 Dichlorobenzene	1	ND	ND	ND
1,2 Dichlorobenzene	1	ND	ND	ND
Total Xylenes	1	ND	ND	ND

ND means None Detected at or above the MRL
MRL means Method Reporting Limit

AR100140

Approved by Dave Edelman Date 1/25/90

CAS

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

CLIENT: Ecology & Environment
SUBMITTED BY: Robert Rau
PROJECT: #TPM-Z014-SAA/TPM-8910-002
SAMPLE DESCRIPTION: Water

DATE RECEIVED: 01/12/90
DATE ANALYZED: 01/14/90
WORK ORDER #: K90119

Volatile Organics Analysis
EPA Methods 8010/8020
µg/L (ppb)

Sample Name:		T0010071	T0010072	T0010073
Lab Code:	MRL	119-7	119-8	119-9
Chloromethane	0.5	ND	ND	ND
Vinyl Chloride	0.5	ND	ND	ND
Bromomethane	0.5	ND	ND	ND
Chloroethane	0.5	ND	ND	ND
1,1-Dichloroethene	0.5	ND	ND	ND
Methylene Chloride	0.5	ND	ND	ND
Trans 1,2-Dichloroethene	0.5	ND	ND	ND
Cis 1,2-Dichloroethene	0.5	ND	ND	ND
1,1-Dichloroethane	0.5	ND	ND	ND
Chloroform	0.5	ND	ND	ND
1,1,1-Trichloroethane	0.5	ND	ND	1.2
Carbon Tetrachloride	0.5	ND	ND	ND
Benzene	1	ND	ND	ND
1,2-Dichloroethane	0.5	ND	ND	ND
Trichloroethene	0.5	ND	ND	ND
1,2-Dichloropropane	0.5	ND	ND	ND
Bromodichloromethane	0.5	ND	ND	ND
2-Chloroethylvinyl ether	0.5	ND	ND	ND
Trans 1,3-Dichloropropene	0.5	ND	ND	ND
Toluene	0.5	ND	ND	ND
Cis 1,3-Dichloropropene	0.5	ND	ND	ND
1,1,2-Trichloroethane	0.5	ND	ND	ND
Tetrachloroethene	0.5	ND	ND	ND
Dibromochloromethane	0.5	ND	ND	ND
Chlorobenzene	0.5	ND	ND	ND
Ethylbenzene	0.5	ND	ND	ND
Bromoform	0.5	ND	ND	ND
1,1,2,2-Tetrachloroethane	0.5	ND	ND	ND
1,3 Dichlorobenzene	1	ND	ND	ND
1,4 Dichlorobenzene	1	ND	ND	ND
1,2 Dichlorobenzene	1	ND	ND	ND
Total Xylenes	1	ND	ND	ND

ND means None Detected at or above the MRL
MRL means Method Reporting Limit

RICHARD CRAVEN 2/13/90

AR100141

T0010072 - Data shows O-xylene 31.8 - GC/MS analysis results show it to be STYRENE

Approved by Dave Edelman

1317 South 13th Avenue • P.O. Box [illegible]

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

CLIENT: Ecology & Environment
SUBMITTED BY: Robert Rau
PROJECT: #TPM-Z014-SAA/TPM-8910-002
SAMPLE DESCRIPTION: Water

DATE RECEIVED: 01/12/90
DATE ANALYZED: 01/14/90
WORK ORDER #: K90119

Volatile Organics Analysis
EPA Methods 8010/8020
µg/L (ppb)

Sample Name:		T0010074	T0010075	T0010076
Lab Code:		119-10	119-11	119-12
	MRL			
Chloromethane	0.5	ND	ND	ND
Vinyl Chloride	0.5	ND	ND	ND
Bromomethane	0.5	ND	ND	ND
Chloroethane	0.5	ND	ND	ND
1,1-Dichloroethene	0.5	ND	ND	ND
Methylene Chloride	0.5	ND	ND	ND
Trans 1,2-Dichloroethene	0.5	ND	ND	ND
Cis 1,2-Dichloroethene	0.5	ND	ND	ND
1,1-Dichloroethane	0.5	0.7	ND	ND
Chloroform	0.5	ND	ND	ND
1,1,1-Trichloroethane	0.5	1.2	ND	0.6
Carbon Tetrachloride	0.5	ND	ND	ND
Benzene	1	ND	ND	ND
1,2-Dichloroethane	0.5	ND	ND	ND
Trichloroethene	0.5	ND	ND	ND
1,2-Dichloropropane	0.5	ND	ND	ND
Bromodichloromethane	0.5	ND	ND	ND
2-Chloroethylvinyl ether	0.5	ND	ND	ND
Trans 1,3-Dichloropropene	0.5	ND	ND	ND
Toluene	0.5	ND	ND	ND
Cis 1,3-Dichloropropene	0.5	ND	ND	ND
1,1,2-Trichloroethane	0.5	ND	ND	ND
Tetrachloroethene	0.5	ND	ND	ND
Dibromochloromethane	0.5	ND	ND	ND
Chlorobenzene	0.5	ND	ND	ND
Ethylbenzene	0.5	ND	ND	ND
Bromoform	0.5	ND	ND	ND
1,1,2,2-Tetrachloroethane	0.5	ND	ND	ND
1,3 Dichlorobenzene	1	ND	ND	ND
1,4 Dichlorobenzene	1	ND	ND	ND
1,2 Dichlorobenzene	1	ND	ND	ND
Total Xylenes	1	ND	ND	ND

AR100142

ND means None Detected at or above the MRL
MRL means Method Reporting Limit

Approved by Dave Eberman Date 1/25/90

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

CLIENT: Ecology & Environment
SUBMITTED BY: Robert Rau
PROJECT: #TPM-Z014-SAA/TPM-8910-002
SAMPLE DESCRIPTION: Water

DATE RECEIVED: 01/12/90
DATE ANALYZED: 01/14/90
WORK ORDER #: K90119

Volatile Organics Analysis
EPA Methods 8010/8020
µg/L (ppb)

Sample Name: / Lab Code:	MRL	T0010077 119-13	T0010078 119-14	Method Blank 0114W3
Chloromethane	0.5	ND	ND	ND
Vinyl Chloride	0.5	ND	ND	ND
Bromomethane	0.5	ND	ND	ND
Chloroethane	0.5	ND	ND	ND
1,1-Dichloroethene	0.5	ND	ND	ND
Methylene Chloride	0.5	ND	ND	ND
Trans 1,2-Dichloroethene	0.5	ND	ND	ND
Cis 1,2-Dichloroethene	0.5	ND	ND	ND
1,1-Dichloroethane	0.5	ND	ND	ND
Chloroform	0.5	ND	ND	ND
1,1,1-Trichloroethane	0.5	ND	ND	ND
Carbon Tetrachloride	0.5	ND	ND	ND
Benzene	1	ND	ND	ND
1,2-Dichloroethane	0.5	ND	ND	ND
Trichloroethene	0.5	ND	ND	ND
1,2-Dichloropropane	0.5	ND	ND	ND
Bromodichloromethane	0.5	ND	ND	ND
2-Chloroethylvinyl ether	0.5	ND	ND	ND
Trans 1,3-Dichloropropene	0.5	ND	ND	ND
Toluene	0.5	ND	ND	ND
Cis 1,3-Dichloropropene	0.5	ND	ND	ND
1,1,2-Trichloroethane	0.5	ND	ND	ND
Tetrachloroethene	0.5	ND	ND	ND
Dibromochloromethane	0.5	ND	ND	ND
Chlorobenzene	0.5	ND	ND	ND
Ethylbenzene	0.5	ND	ND	ND
Bromoform	0.5	ND	ND	ND
1,1,2,2-Tetrachloroethane	0.5	ND	ND	ND
1,3 Dichlorobenzene	1	ND	ND	ND
1,4 Dichlorobenzene	1	ND	ND	ND
1,2 Dichlorobenzene	1	ND	ND	ND
Total Xylenes	1	ND	ND	ND

AR100143

ND means None Detected at or above the MRL
MRL means Method Reporting Limit

Approved by Dave Erlenmeyer Date 1/25/90

ATTACHMENT E

DATA QUALITY REVIEW

ecology and environment, inc.
101 YESLER WAY, SEATTLE, WASHINGTON, 98104, TEL. 206/624-9537
International Specialists in the Environment

MEMORANDUM

DATE: February 7, 1990

TO: Rob Rau, Project Manager, E & E, Seattle

FROM: Jill Roberts, Chemist, E & E, Seattle

THRU: Michael G. Bray, Chemist, E & E, Seattle

SUBJ: **Organic Data Quality Assurance Review, Recticon/Allied Steel, Parkerford, Pennsylvania**

REF: TDD: TPM-8912-001
PAN: TPM-Z014-AAA

The data quality assurance review of 15 water samples collected from the Recticon/Allied Steel site in Parkerford, Pennsylvania has been completed. Volatile organic analyses using EPA method 8010/8020 were performed by Columbia Analytical Services, Kelso, Washington.

The samples were numbered: T0010030 through T0010044

Data Qualifications:

I Holding Time: Acceptable.

All water samples were analyzed within seven days from the sampling date.

II Calibration:

A. Initial Calibration: Data not available.

B. Continuing Calibration: Acceptable.

A continuing calibration standard was analyzed at the beginning of the analytical run. All percent differences were $\leq$ 25% with the exception of the following compounds: chloromethane, vinyl chloride and bromomethane. All positive results for these compounds will be flagged (J) as estimated.

III Blanks:

A. Method Blanks: Acceptable.

Three method blanks were analyzed with the analytical run. All results were below the method detection limit (MDL).

B. Transport Blank: Acceptable.

Sample T0010044 was submitted to the laboratory as a transport blank. There were no contaminants found in the transport blank above the MDL.

IV Surrogate Recovery: Acceptable.

All surrogate recoveries were within the range of 60-120%. There are no surrogate recovery limits established for this method, but it is this reviewer's opinion that these recoveries are acceptable.

V Matrix Spike/Matrix Spike Duplicates: Acceptable.

Sample number T0010036 was spiked in duplicate by the laboratory. The results are summarized in the table below:

Compound	% Recovery MS	MSD	RPD
t-1,2-Dichloroethene	95.2	117	20.5
Trichloroethene	92.1	114	21.3
Tetrachloroethene	92.2	116	22.9
Chlorobenzene	91.6	113	20.9
Toluene	92.3	116	22.8
Benzene	92.6	115	21.6

It is this reviewer's opinion that the data are acceptable.

VI Field Duplicates: Acceptable.

Samples T0010032 and T0010033 were submitted to the laboratory as blind duplicates. All results for both samples are below the method detection limit.

VII Compound Quantitation and Reported Detection Limits: Acceptable.

Quanitation calculations were recalculated to verify accuracy. The reported sample analyte concentrations and detection limits were found to be accurate.

XIII Overall Assessment of Data for Use

The overall usefulness of the data is based on the criteria outlined in "Laboratory Data Validation Functional Guidelines for Evaluating Organic Analyses" (February, 1988).

Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

Data Qualifiers and Definitions

J The associated numerical value is an estimated quantity because the reported concentrations were less than the contract required detection limits or quality control criteria were not met.

U The material was analyzed for but was not detected. The associated numerical value is the sample detection limit or the adjusted sample detection limit.

R The sample results are rejected (analyte may or may not be present) due to gross deficiencies in quality control criteria. Resampling and/or reanalysis is necessary for verification.

N Presumptive evidence of presence of material.

NJ Presumptive evidence of presence of the material at an estimated quantity.

ecology and environment, inc.
101 YESLER WAY, SEATTLE, WASHINGTON, 98104, TEL. 206/624-9537
International Specialists in the Environment

MEMORANDUM

DATE: February 7, 1990

TO: Robert Rau, Project Manager, E & E, Seattle, WA

FROM: Yip Chun, Chemist, E & E, Seattle YC.

THRU: Michael Bray, Chemist, E & E, Seattle, WA MB

SUBJ: **Volatile Organic Data Quality Assurance Review, Recticon/Allied Steel, Parkerford, Pennsylvania**

REF: TDD: TPM-8912-001
PAN: TPM-Z014-AAA

The data quality assurance review of 9 groundwater samples collected from the Allied/Recticon site in Parkerford, PA has been completed. Analyses for volatile organics (EPA methods 8010/8020) were performed by Columbia Analytical Services, Inc., Kelso, WA.

The groundwater samples were numbered: T0010021 through T0010029.

Data Qualifications:

I Holding Time: Acceptable.

The samples were collected January 8, 1990 and analyzed January 11, 1990, which met the holding time requirement of 7 days for aromatic, 14 days for non-aromatic volatiles.

II GC/MS Tuning: Not applicable for GC/Hall methods

III Calibration:

A. Initial Calibration:

A 5 point initial calibration was performed prior to sample analysis with 10, 20, 30, 50, 100 ug/L (ppb) standards. All percent relative standard deviations (% RSD) between calibration factors were less than 30% except for the following four compounds: Chloromethane (110%), Vinyl Chloride (95%),

Bromomethane (96%) and Chloroethane (31%). The laboratory reported that there was headspace in the first three standards (10 ppb, 20 ppb, and 30 ppb) due to instrument problems. All positive results for these four compounds are flagged (J) as estimated.

B. Continuing Calibration: No continuing calibration was performed. One QC check sample (20 ppb) was analyzed. The percent recoveries were all within the range of 66 - 131% which met EPA method 8010/8020 Calibration and QC Acceptance Criteria. No action is required.

IV Blank:

A. Method Blanks: Acceptable.

There were no contaminants found in the blanks above method reporting limit (MRL).

B. Transport Blank: Acceptable.

Sample number T0010027 was submitted to the laboratory as a transport blank. There were no contaminants found in the blank above the MRL.

V Surrogate Recovery:

The Percent Surrogate Recoveries were all within the range of 63.5 to 108. There is no specific control limit for GC volatile surrogate recovery. It is the reviewer's opinion that the surrogate recoveries are acceptable.

VI Matrix Spike/Matrix Spike Duplicates: Acceptable.

The laboratory spiked sample number T0010029. The percent recoveries of matrix spike and matrix spike duplicate were all within the control limits. The relative percent difference between the recoveries were all within the control limits.

VII Field Duplicates: Not applicable.

VIII Compound Quantitation and Reported Detection Limits:

Acceptable. All reported positive sample results were verified and found to be calculated correctly.

IX Overall Assessment of Data for Use

The overall usefulness of the data is based on the criteria outlined in "Laboratory Data Validation Functional Guidelines for Evaluating Organic Analyses" (February, 1988) and from the "Test Methods for Evaluating Solid Waste (SW-846)" for Methods 8010/8020 (September, 1986).

AR100149

Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

Data Qualifiers and Definitions

J - The associated numerical value is an estimated quantity because the reported concentrations were less than the contract required detection limits or quality control criteria were not met.

ecology and environment, inc.
101 YESLER WAY, SEATTLE, WASHINGTON, 98104, TEL. 206/624-9537
International Specialists in the Environment

MEMORANDUM

DATE: February 15, 1990

TO: [redacted], Project Manager, E & E, Seattle

FROM: Jill Roberts, Chemist, E & E, Seattle

THRU: Michael G. Bray, Chemist, E & E, Seattle

SUBJ: **Organic Data Quality Assurance Review, Recticon/Allied Steel, Parkerford, Pennsylvania**

REF: TDD: TPM-8912-001
PAN: TPM-Z014-AAA

The data quality assurance review of 20 water samples collected from the Recticon/Allied Steel site in Parkerford, Pennsylvania has been completed. Organic analyses using EPA method 8010/8020 were performed by Columbia Analytical Services, Kelso, Washington.

The samples were numbered: T0010045 through T0010064

Data Qualifications:

I Holding Time: Acceptable.

All water samples were analyzed within seven days from the sampling date.

II Calibration:

A. Initial Calibration: Data not available.

B. Continuing Calibration: Acceptable.

A continuing calibration standard was analyzed at the beginning of the analytical run. All percent differences were $\leq$ 25% with the exception of the following compounds: chloromethane, vinyl chloride, bromomethane and 1,1-dichloroethene. All positive results for these compounds will be flagged (J) as estimated.

AR100151

III Blanks:

A. Method Blank: Acceptable.

A method blank was analyzed with the analytical run. All results were below the method detection limit (MDL).

B. Transport Blank: Acceptable.

Sample T0010064 was submitted to the laboratory as a transport blank. There were no contaminants found in the transport blank above the MDL.

IV Surrogate Recovery: Acceptable.

All surrogate recoveries were within the range of 60-120%. There are no surrogate recovery limits established for this method, but it is this reviewer's opinion that these recoveries are acceptable.

V Matrix Spike/Matrix Spike Duplicates (MS/MSDs):

Deionized water was used for the matrix spike and matrix spike duplicate analyses. The results are summarized below:

Compound	% Recovery MS	MSD	RPD
t-1,2-Dichloroethene	91.1	93.7	2.8
Trichloroethene	94.5	92.9	1.7
Tetrachloroethene	89.5	90.2	.8
Chlorobenzene	86.3	88.6	2.6
Toluene	99.9	102	2.1
Benzene	97.4	101	3.6

The practice of using deionized water for a matrix spike analysis is not usual, but since adequate sample volumes were not provided to the laboratory for MS/MSD analysis, in this instance it is admissable. Interferences may exist in the matrix which could have an effect on the precision or accuracy of the method; such interferences would not be present in deionized water. MS/MSD analyses from other water samples collected at this site, but analyzed with a different sample batch, were found to be acceptable.

No action is taken on MS/MSD data alone.

VI Field Duplicates: Acceptable.

Sample pairs T0010050/T0010051 and T0010060/T0010061 were submitted to the laboratory as blind duplicates. All results for both sample pairs were below the method detection limit.

VII Compound Quantitation and Reported Detection Limits: Acceptable.

Quanitation calculations were recalculated to verify accuracy. The reported sample analyte concentrations and detection limits were found to be accurate.

XIII Overall Assessment of Data for Use

The overall usefulness of the data is based on the criteria outlined in "Laboratory Data Validation Functional Guidelines for Evaluating Organic Analyses" (February, 1988).

Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

Data Qualifiers and Definitions

J The associated numerical value is an estimated quantity because the reported concentrations were less than the contract required detection limits or quality control criteria were not met.

U The material was analyzed for but was not detected. The associated numerical value is the sample detection limit or the adjusted sample detection limit.

R The sample results are rejected (analyte may or may not be present) due to gross deficiencies in quality control criteria. Resampling and/or reanalysis is necessary for verification.

N Presumptive evidence of presence of material.

NJ Presumptive evidence of presence of the material at an estimated quantity.

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MEMORANDUM

DATE: February 14, 1990

TO: Rob Rau, Project Manager, E & E, Seattle

FROM: Jill Roberts, Chemist, E & E, Seattle

THRU: Michael G. Bray, Chemist, E & E, Seattle

SUBJ: **Organic Data Quality Assurance Review, Recticon/Allied Steel, Parkerford, Pennsylvania**

REF: TDD: TPM-8912-001
PAN: TPM-Z014-AAA

The data quality assurance review of 14 water samples collected from the Recticon/Allied Steel site in Parkerford, Pennsylvania has been completed. Volatile organic analyses were performed by Columbia Analytical Services, Kelso, Washington.

The samples were numbered: T0010065 through T0010078

Data Qualifications:

I Holding Time: Acceptable.

All water samples were analyzed within seven days from the sampling date.

II Calibration:

A. Initial Calibration: Data not available.

B. Continuing Calibration: Acceptable.

A continuing calibration standard was analyzed at the beginning of the analytical run. All percent differences were $\leq$ 25% with the following exceptions: chloromethane, vinyl chloride, bromomethane, 1,1-dichloroethene, t-1,3-dichloropropene and 1,1,2-trichloroethane. Any positive results for these compounds will be flagged (J) as estimated.

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III Blanks:

A. Method Blank: Acceptable.

A method blank was analyzed along with the samples in the analytical run. No contaminants were found in the blank above the method detection limits (MDLs).

B. Transport Blank: Acceptable.

Sample number T0010078 was submitted to the laboratory as a transport blank. There were no contaminants found in the transport blank above the MDL.

C. Transfer Blank: Acceptable.

Sample number T0010077 was submitted to the laboratory as a transfer blank. There were no contaminants found in the transfer blank above the MDL.

IV Surrogate Recovery: Acceptable.

All surrogate recoveries were within the range of 60-120%. There are no surrogate recovery limits established for this method, but it is this reviewer's opinion that these recoveries are acceptable.

V Matrix Spike/Matrix Spike Duplicates (MS/MSDs): Acceptable.

Sample number T0010071 was spiked in duplicate by the laboratory. The results are summarized in the table below:

Compound	% Recovery MS	MSD	RPD
t-1,2-Dichloroethene	94.0	92.6	1.5
Trichloroethene	92.6	92.9	.3
Tetrachloroethene	93.2	95.2	2.1
Chlorobenzene	91.0	91.2	.2
Toluene	91.8	91.8	NC
Benzene	76.6	81.1	5.7

NC = not calculable

It is this reviewer's opinion that the data are acceptable.

VI Field Duplicates: No field duplicates were collected.

VII Compound Quantitation and Reported Detection Limits: Acceptable.

Quanitation calculations were recalculated to verify accuracy. The reported sample analyte concentrations and detection limits were found to be accurate.

XIII Overall Assessment of Data for Use

The overall usefulness of the data is based on the criteria outlined in "Laboratory Data Validation Functional Guidelines for Evaluating Organic Analyses" (February, 1988).

Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

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N Presumptive evidence of presence of material.

NJ Presumptive evidence of presence of the material at an estimated quantity.